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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,359	09/14/2005	Tomoyuki Hosokawa	01165.0945-00000	5444

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Finnegan Henderson Farabow
Garrett & Dunner
901 New York Avenue NW
Washington, DC 20001-4413

EXAMINER	
MATZEK, MATTHEW D	

ART UNIT	PAPER NUMBER
1786	

MAIL DATE	DELIVERY MODE
07/15/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/549,359	HOSOKAWA ET AL.	
	Examiner	Art Unit	
	MATTHEW MATZEK	1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,6,10 and 14-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 5, 6, 10, and 14-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/9/2009 has been entered.

Response to Amendment

2. The amendment dated 12/9/2009 has been fully considered and entered into the Record. Claim 1 has been amended. The amended claim contains no new matter. Claims 1, 2, 5, 6, 10, and 14-17 remain pending.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 2, 5, 6, 10 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perkins et al. (US 5,178,931) in view of Bansal et al. (US 6,548,431) and evidenced by Matsui et al. (US 6,174,602).

a. Perkins et al. teach the creation of a nonwoven laminate comprising three layers, the first and third layers comprising filaments of diameter in excess of 7 microns and the second layer consists of filaments with average diameters of between 0.1 to 10 microns. The layers of the laminate are pattern bonded by the application of thermocompressive bonding (abstract). The first and third layers, which correspond to claimed filamentary fiber nonwoven fabric layers, may be made of polyester (col. 2, lines 56-63). The second layer of Perkins et al., which corresponds to the claimed extremely fine fiber layer, may be made of fibers comprising a mixture of polyethylene or polypropylene (polyolefin) and polyester (col. 5, lines 47-60). Perkins et al. fail to teach the quantity of each polymer to be used in the second layer.

b. Bansal et al. teach a process for making a nonwoven sheet of melt spun fibers comprising at least 30 weight percent polyester having a viscosity less than 0.62 dl/g (abstract). The preferred viscosity of the polyester ranges from 0.40 to 0.60 dl/g (col. 2, lines 37-48). The polyester may be blended with polyethylene (col. 3, lines 12-20). Table 1 demonstrates that the invention of Bansal et al. have water pressure resistances (hydrostatic head) ranging from 3.73-4.12 kPa (conversion done by Examiner). The

fibers of the nonwoven sheet are preferably at least 75 weight percent polyester (col. 11, lines 3-5) and at least one other separate polymer component. This results in less than 25 weight percent polyethylene in the fibers of the nonwoven sheet. The polyester and the "at least one other separate polymer component" polyethylene may be arranged in an "islands in the sea" orientation with the element in greater concentration (polyester) being the "sea" and the polyethylene being the "island" component. This is the same manufacturing process utilized by Applicant, which would also lead to the claimed discontinuous phase of the polyolefin resin scattered in the surface of the extremely fine fibers forming the extremely fine fibers nonwoven fabric. The meltspun fibers of Bansal et al. are on the same diameter scale as those of Perkins et al. (col. 4, lines 3-9). The basis weights of Bansal et al. meet those of the instant claims (Table 1). Adding the Grab Tensile strengths in the Machine and Cross Directions provided in Table 1 and dividing this value yields tensile tenacities that exceed those claimed.

c. The claim limitations recite a discontinuous phase of polyolefin resin mainly scattered in a surface of the extremely fine fibers of the nonwoven fabric as a discontinuous phase. The method of producing extremely fine fibers set forth in Bansal et al. provides for the formation of polyethylene (island portion) mixed with polyester (sea portion) followed by the application of a drawing tension to the fibers that decreases the fiber's diameter and would necessarily cause the elongation of all components within the fiber in the longitudinal direction (col. 2, lines 13-36). Bansal et al. also disclose that any known configuration may be used for the multi-component fibers and that if a fiber contains multiple components that the component with the lower melting temperature

should be located on the fiber's surface. The example provided by Bansal et al. has exterior polyethylene with an interior of polyester. The combination of the configuration and composition teachings set forth in Bansal would result in the claimed fiber surface structure because the polyethylene component would be present on the fibers surface as the lower melting temperature component and would be in the form of a discontinuous phase in the longitudinal direction due to the "island-in-sea" configuration and the fiber's post-formation drawing.

d. Further support for Examiner's assertion that the "island" components of polyolefin resin is scattered in the surface of the extremely fine fibers can be found in the figures of Matsui et al. (US 6,174,602). Particular direction should be paid to Figure 3K, which illustrates that the islands-in-the-sea configuration may have discontinuous "islands" on the periphery of the fiber, thereby meeting the structural limitations of the amended claim.

e. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have increased the hydrostatic head (water pressure resistance) of the combined invention to at least 5.2 kPa by increasing the basis weight of the fabric or decreasing its porosity, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. This is especially true in arts where the variable is one routinely optimized and its factors for variance are understood. Hydrostatic head is such a variable as evidenced by the various disclosures of record.

f. Perkins et al. and Bansal et al. are from the same field of endeavor (i.e. nonwoven fibrous structures).

g. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the middle layer of Perkins et al. with the invention of Bansal et al. with the motivation of using a nonwoven sheet exhibiting high strength comprised of low denier fibers melt spun of low viscosity polyester (col. 8, line 66-col. 9, line 5) as disclosed by Bansal et al.

h. The melt flow rates of the polymers used in Perkins et al. and Bansal et al. are not disclosed. However, the viscosities of the polymers of Bansal et al. are taught and anticipate those polymers disclosed in Applicant's specification. Melt flow rates and inherent viscosities are closely correlated. Therefore, it would be reasonable to presume that the melt flow rates (MFRs) of Bansal et al. either anticipate those currently claimed or it would have been obvious to optimize the MFRs of Bansal et al. to arrive at those instantly claimed motivated by the desire to use a more easily processed polymer because the polymer viscosities of Bansal et al. are so close to those claimed.

i. The solution viscosities as claimed have been treated as process limitations that do not materially impact the final product as the compositional and structural limitations of the instant claims have been met. The presence of process limitations on product claims, in which the product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. *In re Stephens*, 145 USPQ 656. Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts

to Applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi,* 218 USPQ 289, 292.

j. Claim 15 is rejected as the extremely fine fiber nonwoven fabric layer would show the claimed starting level of wetting and impregnating as composition and structure of the claimed invention has been met. Claim 16 is rejected as the extremely fine fibers may be melt blown (col. 4, lines 62-69; Perkins et al.). Claim 17 is rejected as Perkins et al. meet the process limitations for forming the three layer laminate (col. 2 and 3).

Response to Arguments

4. Applicant's arguments filed 12/9/2009 have been fully considered but they are not persuasive.

5. Applicant argues that although Bansal discloses a spunbonded nonwoven fabric corresponding to the spunbonded (S) layer of the claimed invention, the meltblown (M) layer of Bansal does not correspond with the meltblown layer of the claimed invention. Therefore, if Perkins et al.'s invention were to be combined with Bansal it would not be obvious that the amount of the polyolefin resin in the M layer is greater than that in the S layer as claimed. Applicant claims 10-50 % by weight of a polyolefin resin in the S layer and 7 % or less by weight of a polyolefin resin in the M layer. Perkins et al. disclose that the spunbonded layer, the claimed filamentary fiber nonwoven fabric, may consist of polyester. This provides for the

claimed levels of polyolefin resin in this layer because the absence of polyolefin resin is less than 7 weight percent. In combining the Perkins et al. and Bansal references Examiner has only modified the middle layer of Perkins et al.; therefore, M layer would necessarily possess more polyolefin than the S layer because the S layer is devoid of polyolefin. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the middle layer of Perkins et al. with the invention of Bansal et al. with the motivation of using a nonwoven sheet exhibiting high strength comprised of low denier fibers melt spun of low viscosity polyester (col. 8, line 66-col. 9, line 5) as disclosed by Bansal et al.

6. Applicant argues that the claimed invention is different from the "islands in the sea" arrangement because the island component forms a filament in the sea matrix and therefore, is not distributed in "a discontinuous phase, in a longitudinal direction" as claimed. Bansal et al. disclose the use of polyolefin resin as an island in the sea of polyester. The low levels of "island" polyolefin set forth in the applied art and claimed invention. These low levels in conjunction with the sheath core teachings set forth in Bansal et al. would result in discontinuous islands in the sheath (surface) of the extremely fine fibers, thereby providing for the claimed invention.

7. Applicant argues that Examiner's reliance upon Matsui et al. to show that the island component of a polyolefin resin in a sea of a different polymer demonstrates that the island components form continuous filaments, not discontinuous islands as claimed. Examiner has relied upon Matsui et al. to support Examiner's assertion that the "island" components of polyolefin resin are scattered in the surface of the extremely fine fibers can be found in the figures of Matsui et al. (US 6,174,602). Particular direction should be paid to Figure 3K, which

illustrates that the islands-in-the-sea configuration may have "islands" on the periphery of the fiber, thereby meeting the structural limitations of the amended claim. Examiner has not relied upon Matsui et al. to teach that the island portions of the composite fiber are discontinuous. Bansal et al. disclose the use of polyolefin resin as an island in the sea of polyester. The low levels of "island" polyolefin set forth in the applied art and claimed invention. These low levels in conjunction with the sheath-core teachings set forth in Bansal et al. would result in discontinuous islands in the sheath (surface) of the extremely fine fibers, thereby providing for the claimed invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW MATZEK whose telephone number is (571)272-2423. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Chriss can be reached on 571.272.7783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew D Matzek/
Primary Examiner, Art Unit 1786